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10/675,478

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EXAMINER

CASCA, FRED A

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/675,478 | Applicant(s) BAGCHI ET AL. | |
| | Examiner FRED A. CASCA | Art Unit 2617 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 23-38 and 64-80 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 64-80 is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-10, 13-32, and 34-38 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 11, 12 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to applicant's amendment filed on November 03, 2008. Claims 1-13, 23-38 and 64-80 are still pending in the present application. **THIS ACTION IS FINAL.**

Response to Arguments

2. Applicant's arguments with respect to claims 1-13 and 23-38 have been considered and they are not persuasive.

In response to applicant's arguments that there are a number of hardware components in claim 1, it is noted that the features upon which the applicant relies (e.g., "hardware components", "selecting a hardware component") are not cited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. *See in re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).*

Further, Jaffe's performing of a pre-processing analysis of a signal in order to determine the best channel for that signal clearly reads on the language of the claim which states "pre-processing of the received frame to calculate a confidence level indicating whether the received frame is intended for that PHY receiver." Note that the confidence level that simply refers to the capability or compatibility of the channel with reference to the received signal. Furthermore, in electric communication, a person of the ordinary skill in the art would know that antennas are tuned to operate on particular frequency channels.

Furthermore, note that the primary reference used by examiner in the rejection of claims is Shpak (US 2004/0162037 A1), not Jaffe by itself. Jaffe discloses the pre-processing of a signal element so that the best channel can be selected.

Shpak teaches that an access point comprises multiple antennas (transmitters and receivers) where each of these antennas is tuned for operation on a different frequency channel (Shpak, paragraph 8, lines 5-9). Thus, a person of ordinary skill in the art would be able to see that a receiver would be selected after the pre-processing analysis. Thus, Jaffe's teaching of pre-processing a signal to select the best channel, and Shpak's teaching of each receiver tuned on a different frequency channel clearly read on the language claimed in claim 1 and other independent claims.

Furthermore, the concept of pre-processing of a receive frame to calculate a confidence level indicating whether the received frame is intended for a receiver, is a definition of "space diversity". And Shpak's application is based on space diversity (Shpak, paragraph 8, line 10), where space diversity allows selecting the best receiver/transmitter from a plurality of receivers/transmitters for transmission/reception processes based on a pilot signal test/analysis. Therefore, Shpak's application also reads on the language claimed in claim 1 and other independent claims.

In response to arguments that "confidence level" is not in Jaffe, the examiner respectfully disagrees and asserts that "confidence level" is interpreted as the capability or performance level of the receiver or channel that can best serve the signal, and when a channel or receiver is selected according a performance criteria, it inherently means a selection according to the capability level.

In response to arguments that not all of Shpak's receivers perform any processing and/or pre-processing of a received signal, the examiner asserts that Jaffe also teaches concept of pre-processing. Further, Shpak's pre-processing part of signal by some of receivers combined with the pre-processing teachings of Jaffe would enable a person of ordinary skill in the art to come up with the claimed invention of applicant. Thus, it would be obvious to a person of ordinary skill in the art to combine the Jaffe with Shpak in order to come up with the claimed invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 9, 23-24, 27, 28-29, 32, 34, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shpak (US 2004/0162037 A1) in view of Vaisanen et al (US 20040192222 A1) and further in view of Gorday et al (US 2004/0203836 A1) and still further in view of Jaffe et al (US 2003/0231720 A1).

Shpak discloses a WLAN (Wireless Local Area Network) interactive device (abstract and figure 1, “access point”), the device comprising:

a classifier (Fig. 3, note that a classifier must exist in order to choose from one of the three radio channels); a plurality of PHY (physical layer) receivers wherein each PHY receiver of the plurality of PHY receivers is communicatively coupled to the classifier (Figs. 1-2, and paragraph 8, “multiple frequency channels”); and wherein: the device receives a frame of data (figs. 1-3 and paragraph 2, “WLAN”, note WLAN receivers receive frame of data as in any digital communication system); each PHY receiver of the plurality of PHY receivers calculate a confidence level indicating whether the received frame is intended for that PHY receiver (Figs. 2-3 and paragraph 48, “The triplexers shown here, for use in the 2.4 GHz band of IEEE

802.11b/g, are just one example of RF multiplexes that may be used in sharing antennas among multiple WLAN channels ... six- or eight-way multiplexer could be used”, note that one of the transceivers (PHY receiver) from a plurality of transceiver is selected (classified) according to its level confidence (capabilities)); each PHY receiver or" the plurality of PHY receivers that calculates a confidence level that is equal to or that corresponds to that PHY receiver asserts a claim to the classifier (Figs. 2-3 and paragraph 48, note the selection of one of the plurality of transceivers according capabilities); when 2 or more PHY receivers of the plurality of PHY receivers assert claims to the classifier, the classifier arbitrates the claims and designates 1 of the 2 or more PHY receivers as being an intended PHY receiver (Figs. 2-3 and paragraphs 47-50); when only 1 PHY receiver of the plurality of PHY receivers asserts a claim to the classifier, the classifier designates that 1 PHY receiver as being the intended PHY receiver (Figs. 2-3 and paragraphs 47-50); the classifier asserts a PHY select signal to the intended PHY receiver; as being the intended PHY receiver processes the received frame (paragraphs 44, 47, 51, note that one of the transceivers has to be selected to process the received frame).

Shpak does not specifically disclose the receivers performing pre-processing of the received frame to calculate a confidence level indicating whether the received frame is intended for that PHY receiver in the format claimed by applicant.

However, the concept of performing pre-processing functions to calculate certain characteristics of a received signal is conventional in the art. Jaffe discloses performing pre-processing functions to a received signal in order to determine such characteristics

of the received signal for a subsequent better channel selection process (paragraphs 71-72 and Fig. 1-12, "receiver pre-processing function block and is provided to a PHY sub-channel selection").

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the device of Shpak, in the format claimed by applicant, by incorporating the teachings of Jaffe, for the purpose of providing an efficient communication channel distribution and selection, and thus providing an efficient communication system.

The combination of Shpak/Jaffe does not specifically disclose the concept of **exceeding a threshold**, as claimed by the applicant.

In the same field of endeavor, Vaisanen discloses using pre-defined threshold value in selecting a better/appropriate signal (paragraphs 57, 86, 89, 97 and 100, "threshold").

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the combo, for the purpose of making a better classification/selection and thus an efficient communication system.

The combination of Shpak/Jaffe/Vaisanen does not disclose **asserting a done signal by the intended PHY receiver to the classifier** after the intended PHY receiver finishes processing the received frame, as claimed by applicant.

However, the concept of **asserting a done signal or sending an ACK by an intended PHY receiver** is well known concept and is disclosed by Gorday (paragraphs 42 and 43, “the mobile WLAN base station **acknowledges** receipt of the message and the selected service options”).

It would have been obvious to one of the skills in the art at the time of invention to modify the combo as claimed by applicant, for the purpose of maintaining control over the system, keeping tracking of signal being processed, preventing signal loss, and consequently providing an efficient communication system.

Referring to claim 2, the combo of Shpak/Jaffe/Vaisanen/Gorday disclose the device of claim 1, and further disclose the classifier is communicatively coupled to a plurality of higher protocol layers; and one higher protocol layer of the plurality of higher protocol layers is either a MAC (Medium Access Controller) or a higher application layer (Shpak, par. 50).

Referring to claim 9, Shpak/Jaffe/Vaisanen/Gorday disclose the device of claim 1, and further disclose each PHY receiver of the plurality of PHY receivers provides its corresponding confidence level to the classifier; and when 2 or more PHY receivers of the plurality of PHY receivers assert claims to the classifier, the classifier arbitrates the claims by considering the asserted claims and the confidence levels corresponding to each PHY receiver of the plurality of PHY receivers and designates 1 of the PHY receivers as being an intended PHY receiver (please see the rejection of claim 1 above).

Referring to claim 3, the combo of Shpak/Jaffe/Vaisanen/Gorday disclose the device of claim 1, and further disclose PHY receiver of the plurality of PHY receivers is a DSSS/CCK (Direct Sequence Spread Spectrum with Complementary Code Keying) PHY receiver; and the DSSS/CCK PHY receiver computes a correlation using the received frame and a predetermined spreading sequence of a DSSS/CCK frame (Shpak, pars: 2 and 39, note that “Bluetooth” uses DSSS/CCK).

Regarding claims 23 and 24, claims 23 and 24 define a method reciting features analogous to features of device of claims 1 and 3 (as rejected above). Thus the combinations of Shpak/Jaffe/Vaisanen/Gorday disclose all elements of claims 23 and 24 (please see the rejection of claims 1 and 3 above).

Regarding claim 28, claim 28 defines a method reciting features analogous to features of device of claim 1 (as rejected above). Thus the combinations of Shpak/Jaffe/Vaisanen/Gorday disclose all elements of claim 28 (please see the rejection of claim 1 above).

Referring to claims 27 and 32, the combo of Shpak/Jaffe/Vaisanen/Gorday disclose the device and methods of claims 1 and 28, and further disclose before processing the received frame using the intended PHY receiver, performing gain control to scale the received frame to a range that is appropriate for the intended PHY receiver (See the rejection claim 1 above, note that performing gain control, e.g., in CDMA system is simply qualifying a signal for the proper receiver).

Claims 29, 34 and 35 are rejected for the same reasons as that of rejection of claims 2-3 and 9.

5. Claims 8, 10, 13, 25, 30, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shpak (US 2004/0162037 A1), in view of Jaffe et al (US 2003/0231720 A1), in view of Vaisanen et al (US 2004/0192222 A1) and further in view of Gorday et al (US 2004/0203836 A1) and further in view of well known prior art (MPEP 2144.03).

Referring to claim 8, the combination of Shpak/Jaffe/Vaisanen/Gorday discloses the device of claim 1.

The combo does not specifically disclose receiving a false claim percentage that is less than a demodulation error rate as claimed by the applicant.

The examiner takes official notice of the fact the measuring false claim percentage and comparing to BER is well known in the art.

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the combo as claimed, for the purpose of improving error rates.

Referring to claim 10, the combo of Shpak/Jaffe/Vaisanen/Gorday discloses the device of claim 1.

The combo does not specifically disclose the OFDM PHY receiver includes ED (Energy Detect) functionality that is operable to calculate an energy of the received frame.

The examiner takes official notice of the fact that OFDM receiver including ED (Energy Detect) functionality are well known in the art.

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the combo as claimed, for the purpose of providing an improved and efficient communication system.

Referring to claim 13, the combo of Shpak/Jaffe/Vaisanen/Gorday discloses the device of claim 1.

The combo does not specifically disclose all receivers in single IC as claimed.

The examiner takes official notice of the fact that implementing receivers in a single IC is well known in the art.

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the combo as claimed, for the purpose of providing smaller size receivers.

Claims 36-38 are rejected for the same reasons as that of rejection of claims 8, 10 and 13.

Referring to claims 25 and 30, the combo of Shpak/Jaffe/Vaisanen/Gorday discloses the device of claims 23 and 28.

The combo does not specifically disclose computing a correlation using the received frame and a delayed copy of the received frame wherein the delay is a period of a training sequence of received frame as claimed.

The examiner takes official notice of the fact that computing a correlation using the received frame and a delayed copy of the received frame is well known in the art, e.g., in coherent communications, pilot signals are transmitted and then a correlation is established. Further, setting the delay period to be of a specific length is a design choice.

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the combo as claimed, for the purpose of providing an efficient communication system.

6. Claims 4-5, 26, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shpak (US 2004/0162037 A1) in view of Jaffe et al (US 20030231720 A1), further in view of Vaisanen et al (US 20040192222 A1) and still further in view of Gorday et al (US 2004/0203836 A1) and further still in view of Rajamani et al (US 20040214539 A1).

Referring to claim 4, the combo of Shpak/Jaffe/Vaisanen/Gorday discloses the device of claim 1.

The combo o does not disclose OFDM receivers as claimed by applicant.

In the same field of endeavor, Rajamani discloses OFDM signals and receivers (par: 17).

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the combo as claimed by the applicant, for the purpose of providing a more efficient communication system by using an advanced modulation scheme.

Referring to claim 5, the combo of Shpak/Jaffe/Vaisanen/Gorday discloses the device of claim 1.

The combo does not disclose the receivers to be 802.11a, 802.11b and 802.11g as claimed by applicant.

In the same field of endeavor, Rajamani discloses 802.11a, 802.11b and 802.11g receivers (par: 17).

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the combo as claimed by the applicant, for the purpose of providing a more efficient communication system by making the system more robust and allowing different protocols to operable in the system .

Claims 26 and 31 are rejected for the same reasons as that of rejection of claim 5.

Claims 14-22 and 39-63 have been cancelled.

Allowable Subject Matter

7. Claim 6, 7, 11, 12 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 64-80 are allowed.

Conclusion

8. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED A. CASCA whose telephone number is (571)272-7918. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Harper, can be reached at (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

Art Unit: 2617

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/VINCENT P. HARPER/

Supervisory Patent Examiner, Art Unit 2617